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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,513	06/03/2005	Susumu Noda	123457	4535

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ALEXANDRIA, VA 22320

EXAMINER

PETKOVSEK, DANIEL J

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/537,513

Applicant(s)

NODA ET AL.

Examiner

Daniel J. Petkovsek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on supplemental pre-amd filed Oct 12, 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 21, 25-32 and 35-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21, 25-32, and 35-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on June 3, 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/6/05; 6/3/05</u>  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This office action is in response to the supplemental pre-amendment to the claims filed October 12, 2005. Claims 21, 25-32, and 35-39 are pending.

#### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

2. The prior art documents submitted by Applicant in the Information Disclosure Statements filed on July 6, 2005 and June 3, 2005, have been considered and made of record (note attached copy of forms PTO-1449). Please note the follow paragraph for 4 IDS references that were not considered.

3. It is noted that prior art documents 5, and 7-9 in the PTO-1449 form filed on June 3, 2005, have not been considered, since the NPL references were written totally in Japanese, with no translation. Applicant is advised to supply a translation copy of each reference in response to this office action.

#### ***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the abstract is too long (over 150 words). Applicant is requested to supply a more brief and concise abstract. Correction is required. See MPEP § 608.01(b).

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21, 25-32, and 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flory et al. U.S.P. No. 6,687,447 B2.

Flory et al. U.S.P. No. 6,687,447 B2 teaches (ABS, Fig. 4, column 5, line 54 through column 6, line 20) a two dimensional photonic crystal optical MUX/DEMUX 40 using boundary reflection, comprising: a slab shaped body 42; plural modified refractive index areas 46 arranged periodically in the body, each having a refractive index different from that of the body, a waveguide 44 formed by creating a defect of the modified refractive index areas in a linear arrangement, the end of which is located on an end of the body, a point like defect area (area with 47/52) formed by creating a defect of modified refractive index areas in the vicinity of the waveguide 44, and a first reflection section inherently provided at the end of the waveguide for the intended result of reflecting light of a particular wavelength. Flory et al. '447 does not explicitly teach that the device is further connected to another photonic crystal device

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(independent claim 21) or a plurality of forbidden band zones with particular waveguide transmittable band being present and at a resonant wavelength (independent claim 31).

However, a person having ordinary skill in the art at the time the invention was made would have recognized further coupling the photonic crystal device of Flory et al. '447 to a further or secondary photonic crystal or in particular forbidden bands in the body. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have recognized that the single device of Flory et al. '447 as discussed above, although not explicitly disclosed as having use in a coupling arrangement as claimed, to have been an obvious modification, since it is known in the art that the use of these photonic crystal devices in further coupling configuration is desired in order to effectuate a number of optical signals. The use of a secondary coupling configuration is known to improve optical functionality by allowing for, at least, a plurality of different resonant regions such as region 47/52 of Flory et al. '447.

Regarding claims 25-30, 32, and 35-39, a person having ordinary skill in the art at the time the invention was made would have recognize that these claims limitations were obvious design choices to a skilled artisan, in that these claimed limitations are ordinary ranges, ratios, and values that would allow for proper utilization of the two-dimensional photonic crystal optical MUX/DEMUX devices. These further limiting dependent claims upon independent claims 21 and 31 are viewed as non-critical in view of rejection of claims 21 and 31, which claims 25-30, 32, and 35-39 depend from.


*Conclusion*

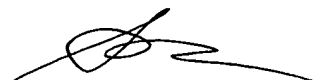
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, with respect to the state of the art of photonic crystals having point-like defects: PTO-892 form references A-E.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Petkovsek whose telephone number is (571) 272-2355. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Daniel Petkovsek  
October 1, 2006

  
SUNG PAK  
PRIMARY EXAMINER